

A. T. A.
OVERHAUL MANUAL

OXYGEN SHUT-OFF VALVE ASSEMBLY
800156 SERIES

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OXYGEN SHUT-OFF VALVE ASSEMBLY

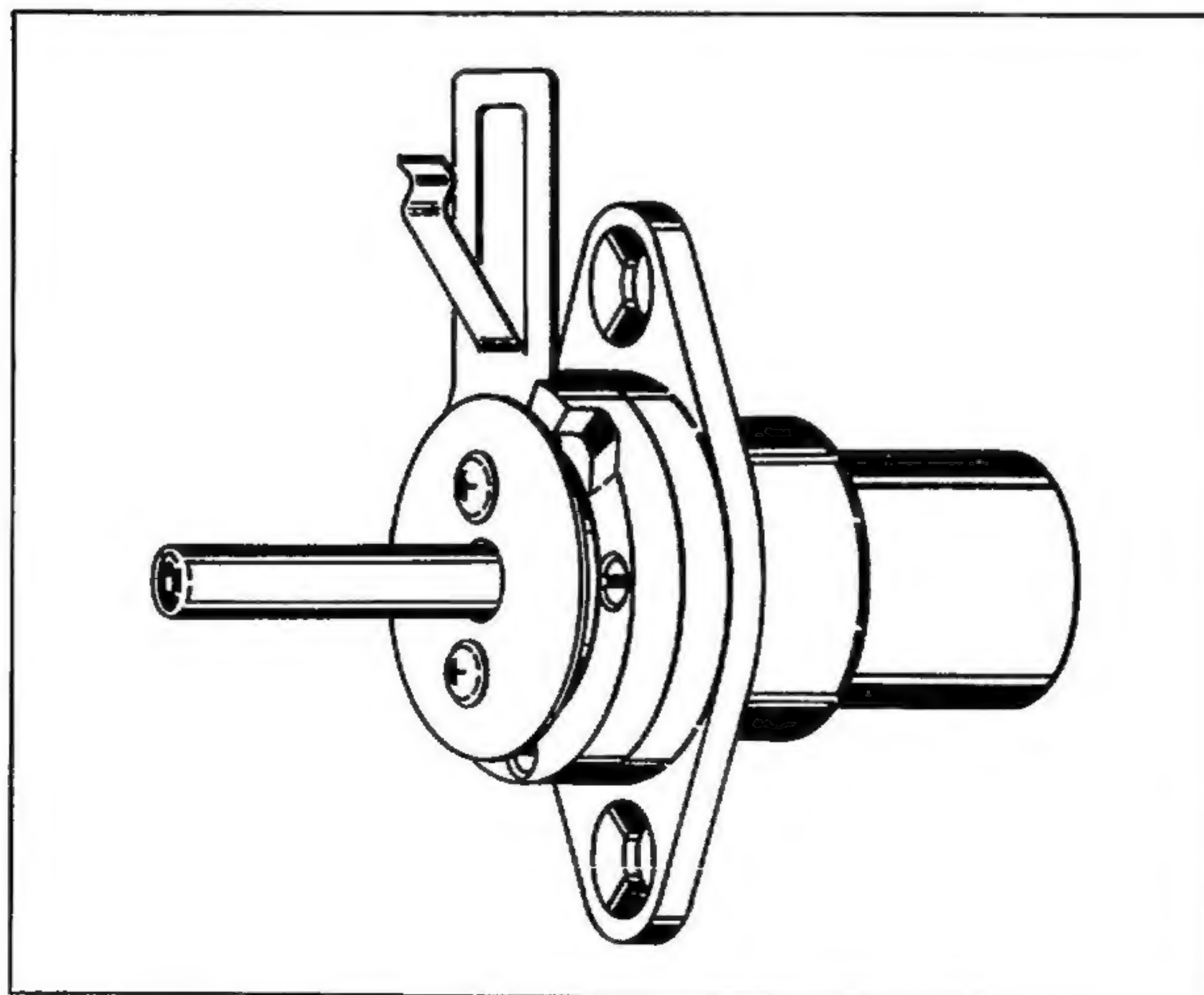
1. **General**

- A. This manual provides overhaul instructions with illustrated parts list for the 800156-00 and 800156-01 Oxygen Shut-Off Valve Assemblies. (See figure 1.)
- B. All 800156 Valve Assemblies are identical in construction. The only difference which exists is in the amount of flow each valve permits. For specific differences refer to the Illustrated Parts List.

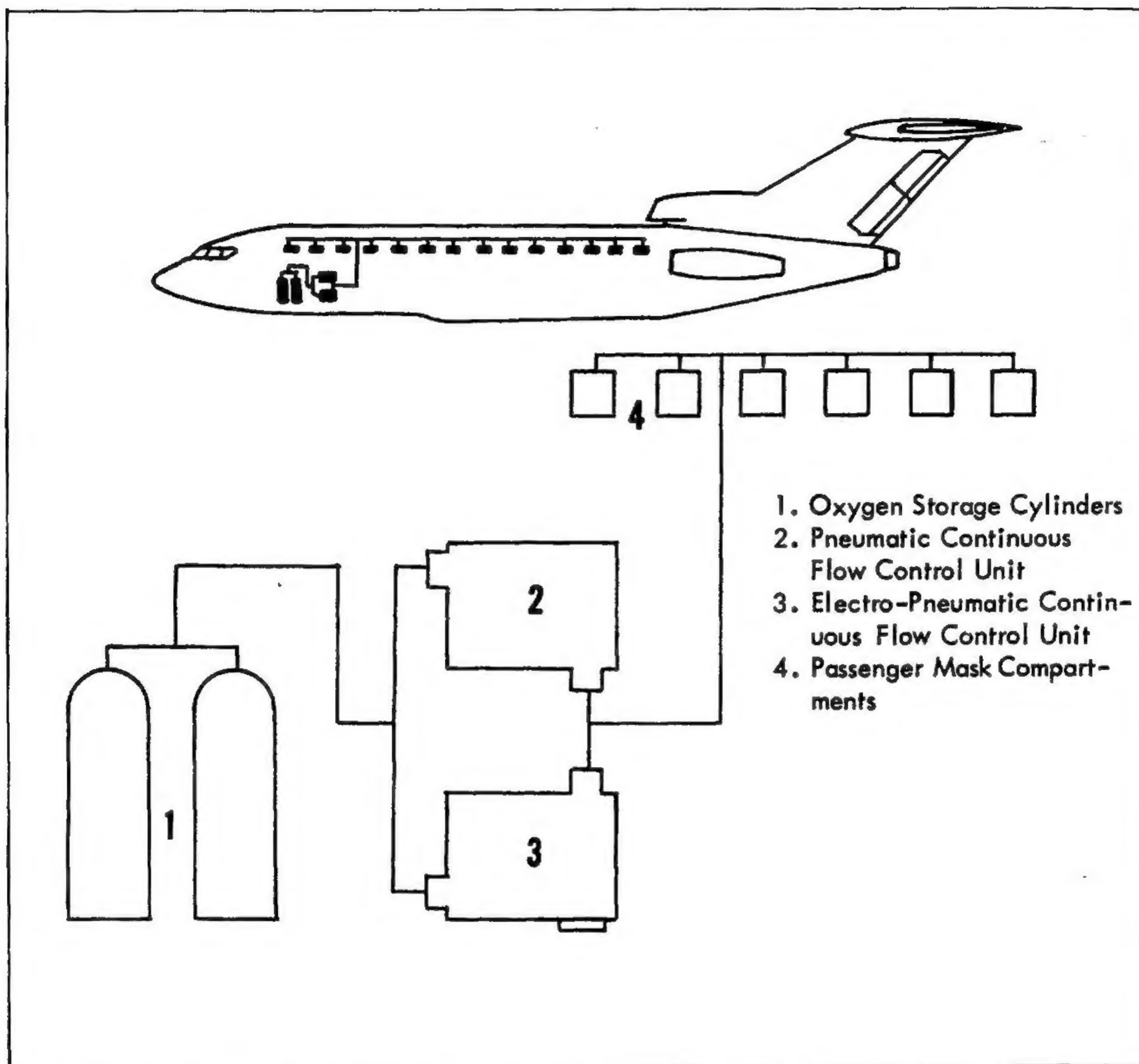
2. **Description and Operation**

A. **Purpose of Equipment**

- (1) The 800156 Valve Assemblies are manually operated on-off oxygen valves which provide a metered flow of oxygen for passenger breathing purposes. The valve assemblies are designed to provide proper flow at normal inlet pressures of 20 to 50 psi.



Oxygen Shut-Off Valve Assembly
Figure 1

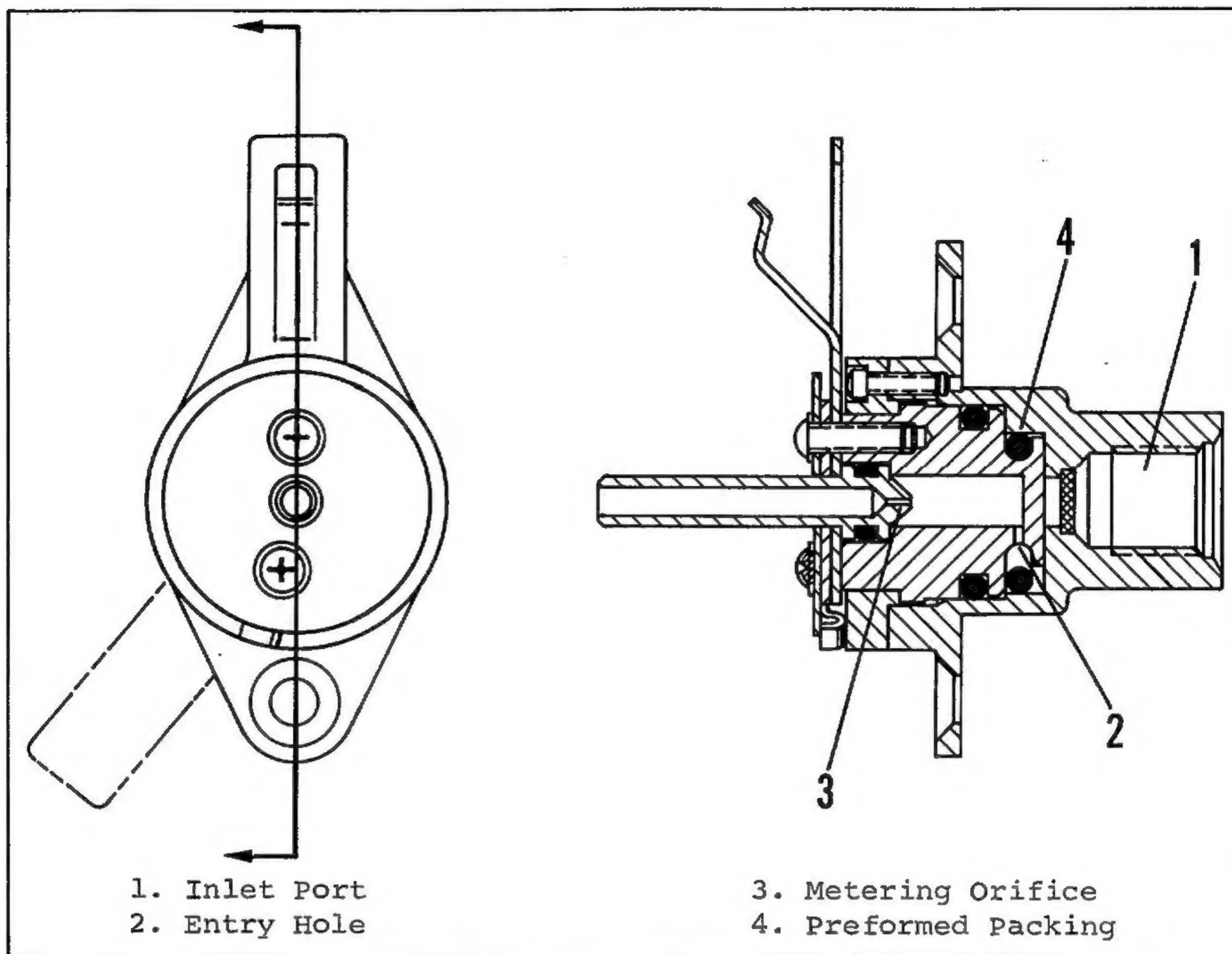


Typical Installation

Figure 2

B. Typical Installation

- (1) A typical pressurized cabin installation of the valves is shown in figure 2. An oxygen source consisting of a series of storage cylinders (1) is connected to flow control units (2 and 3) which automatically initiate and control the flow of oxygen to passenger mask compartments (4). The oxygen shut-off valve assemblies are located in the passenger mask compartments (4). When the flow control units are activated, oxygen



Valve Assembly Cross Section
Figure 3

flows to and opens the mask compartment doors. The passenger masks, which are connected to the levers of the shut-off valves, drop in front of the passengers when the mask compartment doors are released. When the mask is grasped by the passenger, the lever of the shut-off valve is pulled to the "ON" position thus supplying a metered supply of oxygen to the mask user.

C. Operation (See figure 3)

- (1) Oxygen enters the shut-off valve at inlet port (1) and flows into the eccentric portion of the housing. When the valve is in the "ON" position, as shown in figure 3, oxygen is permitted to flow through the entry hole (2) in the piston valve and out through the metering orifice to the user. When



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the operating lever is placed in the "OFF" position, the valve piston is rotated on the eccentric of the housing causing preformed packing (4) to seal off entry hole (2). This prevents the flow of oxygen past the entry hole.

3. Disassembly (See figure 6)

- A. Remove screws (5) which retain identification plate (3) to piston valve (13). This will also permit removal of clamp (6), lever (7) and insert (8).
- B. Remove packing (10) from insert (8).
- C. Remove screws (12) which retain index ring (11) to housing (17).
- D. Remove piston valve (13) from housing (17) and remove packings (14 and 15) from valve (13).
- E. Complete disassembly by removing filter (16) from housing (17), if necessary.

4. Cleaning

WARNING: DO NOT ALLOW OIL, GREASE, FLAMMABLE SOLVENTS, OR OTHER COMBUSTIBLE MATERIALS TO COME IN CONTACT WITH PARTS THAT WILL BE EXPOSED TO PRESSURIZED OXYGEN. SUCH MATERIALS, AS WELL AS DUST, LINT, AND FINE METAL FILINGS ARE ALL POTENTIAL COMBUSTIBLES WHICH MIGHT, WHEN EXPOSED TO OXYGEN UNDER PRESSURE, IGNITE AND RESULT IN AN EXPLOSION.

- A. Prior to assembly, clean all metal parts by dipping in a solution of clean Trichlorethylene, Specification MIL-T-7003, or by using a Freon degreasing method.

WARNING: USE TRICHCLORETHYLENE IN A WELL-VENTILATED AREA ONLY. AVOID PROLONGED OR REPEATED CONTACT WITH SKIN AND INHALATION OF TOXIC VAPORS.

- B. Clean all other parts (other than metal) using a detergent solution. After cleaning, rinse all parts



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thoroughly and dry completely.

5. Inspection

- A. Visually inspect all parts for cracks, nicks, burrs or damaged threads which might cause malfunction of the valve.

6. Repair and Replacement (See figure 6)

- A. Repair of parts other than removing burrs or chasing threads is not recommended. If a part is in need of more extensive repair, replace it.
- B. Replace packings (10, 14 and 15).

7. Assembly (See figure 6)

- A. Secure filter (16) in housing (17).
- B. Apply a thin film of Fluorolube No. GR 362 (Manufactured by Hooker Chemical Corp., Niagara Falls, N.Y.) to packings (14 and 15) and reassemble these to piston valve (13).
- C. Place piston valve (13) with packings (14 and 15) into housing (17). Secure these parts by assembling index ring (11) to housing (17) and securing with screws (12).
- D. Apply a thin film of Fluorolube No. GR 362 (Manufactured by Hooker Chemical Corp., Niagara Falls, N.Y.) to packing (10) and reassemble packing to insert (8).
- E. Place insert (8), lever (7), clamp (6) and identification plate (3) in position on piston valve (13) and secure by installing screws (5). Before tightening screws (5), rotate clamp (6) until opening force at lever (7) is 3 inch pounds.

8. Testing

- A. Leakage Test



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- (1) Suitably plug the valve outlet and place lever (7, figure 6) in the "ON" position.
- (2) Apply 200 psi at the valve inlet port for a period of two minutes. There shall be no evidence of external leakage or permanent deformation.
- (3) Uncap the inlet port and place lever (7) in the "OFF" position.
- (4) Increase the inlet pressure from 0 to 100 psi over a period of 5 seconds and maintain 100 psi for a period of two minutes. Leakage as indicated by bubbles is permissible up to a maximum of 16 bubbles per minute with the valve vertical and the valve outlet down and submerged approximately 1-1/8 inches in a solution of sodiumchromate and water. Thoroughly dry the valve after testing.

B. Operation Test

- (1) With an inlet pressure of 100 psi and the valve outlet open, cycle the valve at least 5 times. There must be no evidence of binding, sticking or other malfunction after unhooking the lever from the extreme "OFF" position.
- (2) Check the torque required to move lever (7, figure 6) from the "OFF" to "ON" position with no inlet pressure. The required force must exceed 2 inch pounds.
- (3) Check the torque required to move lever (7) from the "OFF" to "ON" position with an inlet pressure of 100 psig. The required force must not exceed 9 inch pounds.

C. Orifice Flow Test

- (1) Connect a flowmeter to the regulator outlet and apply inlet pressures of 20 and 50 psi.
- (2) Flows, as indicated by the flowmeter must be as shown in figure 4. If the flows are not as shown, remove insert (8, figure 6) and replace it with a new one, then retest the unit.

Inlet Pressure PSIG	Flow - Liters Per Minute (760 MM Hg)	
	For 800156-00	For 800156-01
20	3.0 to 3.4	5.9 to 6.9
50	5.5 to 6.3	10.9 to 12.7

Orifice Flow Requirements
Figure 4

9. Trouble Shooting

A. See figure 5 for a chart containing troubles, probable causes and remedies.

TROUBLE	PROBABLE CAUSE	REMEDY
Leakage with valve outlet plugged and in "ON" position	Faulty packing(s) (10 and/or 14, figure 6)	Replace packing(s)
Excessive leakage at valve outlet with outlet in "OFF" position	Faulty packing (15)	Replace packing
Force required to open valve is more than 9 in. pounds with 100 psi inlet	Clamp (6) not positioned properly	When facing valve, rotate clamp (6) in clockwise direction
Force required to open valve is less than 2 in. pounds with no inlet	Clamp (6) not positioned properly	When facing valve, rotate clamp (6) in counterclockwise direction
Outlet flow is less than amount shown in figure 4	Filter (16, figure 6) clogged	Clean filter in accordance with paragraph 4.
	Metering orifice (3, figure 3) damaged	Replace insert (8, figure 6)

Trouble Shooting Chart
(Sheet 1 of 2)
Figure 5



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Outlet flow is more than amount shown in figure 4	Metering orifice (3, figure 3) damaged	Replace insert (8, figure 6)
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Trouble Shooting Chart
(Sheet 2 of 2)
Figure 5

10. Storage Instructions

- A. Suitably cap the valve assembly inlet and outlet ports with protective closures, then wrap the unit in a clean plastic bag to prevent contamination.

11. Special Tools

- A. Special tools and test equipment are not required to overhaul the valve assembly.

12. Illustrated Parts List

- A. This Illustrated Parts List lists and describes the parts of the 800156-00 and 800156-01 valve assemblies.
 - (1) The Illustrated Parts List consists of a parts listing and a completely indexed drawing. The valve assemblies are followed immediately by their component parts, properly indented thereunder, to show their relationship to the assemblies.
 - (2) The quantities listed in the "UNITS PER ASSY" column are the total quantities used per valve assembly at the location indicated.
 - (3) The part numbers listed in the "PART NUMBER" column are Scott Aviation Corporation part numbers except standard parts, which are listed by "MS" and "AN" part number and vendor items which are listed by the vendor's part number and contain the vendor's name and address in the "NOMENCLATURE" column.
 - (4) Parts used on only one part number valve assembly

are indicated by a letter symbol immediately following the description of a part in the "EFFECT CODE" column. In cases where the "EFFECT CODE" column has been left blank, parts listed are common to all valve assemblies.

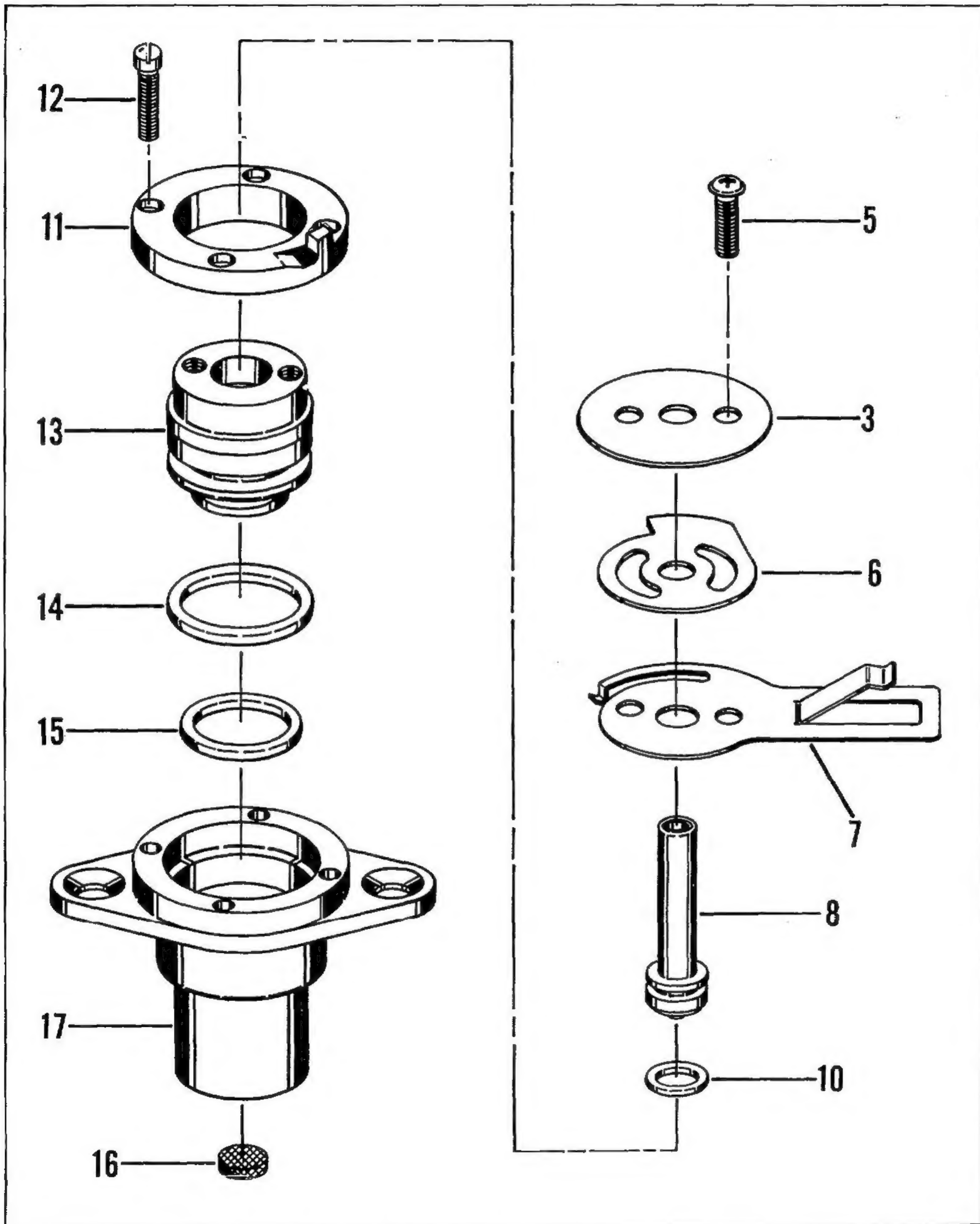
PART NUMBER	EFFECT CODE
800156-00	A
800156-01	B

B. How to Use This Illustrated Parts List

- (1) If neither the part number nor the nomenclature is known, the part can be found by comparison with the exploded view illustration. When located on the illustration, the item number will refer to the line in the Group Assembly Parts List with the part number and the nomenclature.
- (2) If the part number is known and it is desired to find the nomenclature or the illustration of the part, locate the part number in the "PART NO." column of the Group Assembly Parts List. The next column gives the nomenclature and the item number refers to the part in the exploded view illustration.

FIG. ITEM	PART NUMBER	NOMENCLATURE							EFFECT CODE	UNITS PER ASSY
		1	2	3	4	5	6	7		
6 - 1	800156-00	VALVE ASSEMBLY - SHUT-OFF - OXYGEN							A	1
- 2	800156-01	VALVE ASSEMBLY - SHUT-OFF - OXYGEN							B	1
3	10000450	. PLATE - IDENTIFICATION							A	1
- 4	10000561	. PLATE - IDENTIFICATION (ATTACHING PARTS)							B	1
5	57674	. SCREW - MACHINE -----*								2
6	10000448	. CLAMP								1
7	10000447	. LEVER								1
8	9056-2	. INSERT							A	1
- 9	9056-1	. INSERT							B	1
10	AN6227-3	. PACKING - PREFORMED								1

- ITEM NOT ILLUSTRATED



Oxygen Shut-Off Valve Assembly

Figure 6



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FIG. ITEM	PART NUMBER	NOMENCLATURE							EFFECT CODE	UNITS PER ASSY
		1	2	3	4	5	6	7		
6	11	10000445	.	RING	-	INDEX				1
	12	57673	.	SCREW	-	THREAD CUTTING				4
	13	10000446	.	VALVE	-	PISTON				1
	14	2-113N 163-7	.	PACKING	-	PREFORMED (Mfd. by Parker Seal Co., Cleveland, Ohio)				1
	15	2-110N 163-7	.	PACKING	-	PREFORMED (Mfd. by Parker Seal Co., Cleveland, Ohio)				1
	16	8938	.	FILTER						1
	17	10000444	.	HOUSING						1

- ITEM NOT ILLUSTRATED